

## Form 504

## U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

## DESCRIPTIVE REPORT

Type of Survey Hydrographic  Field No. 6468 Office No. H6468
LOCALITY
StateMassachusetts
General locality Nantucket Sound
LocalityWaquoit Bay, Succonnesset Shoal
194 2
CHIEF OF PARTY
J. Bowie W. Deane
LIBRARY & ARCHIVES
DATE Mo yr 71 1047

B-1870-1 (1)

## DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

## HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Field No. \_\_\_\_6/168\_\_\_

REGISTER NO. H6468	
State Massachusetts	
General locality Nantucket Sound	
Locality Waquoit Bay, Succonnesset Shoal	,
Scale 1: 10,000 Date of survey Aug. 3 - 19 , 194	<u>,2</u>
Vessel M. V. GILBERT	
Chief of Party John Bowie, Jr.	
Surveyed by John Bowie, Jr. and Harry F. Garber, William F	
Protracted by L.E. Klienfelter	
Soundings penciled by L.E. Klienfelter	•••
Soundings in fachbours feet	
Plane of reference M. L. W.	
Subdivision of wire dragged areas by	
Inked by	
Verified by <i>P.H. Andras</i> Supplemental Jan 17, 1938	
Instructions dated March 9,, 1942	
Remarks: This sheet was processed at the Norfolk Process	ing
office.	

to

Accompany Sheet 6468

Nantucket Sound, Mass.

Motor Vessel GILBERT

John Bowie, Jr., Chief of Party

Launch FARIS

William F. Deane, Chief of Party

August 1942

## AUTHORITY:

The additional work on this sheet was done in accordance with Supplemental Instructions, Project HT - 217, dated March 9, 1942.

Original Instructions Jau 17,1938

#### PURPOSE OF WORK:

The purpose of this survey was to resurvey areas for which records were lost when the Launch MIKAWE burned.

#### CONTROL:

Signals established along the beach and artificial objects when available, were located by topographic methods for control of the hydrography.

#### SURVEY METHODS:

Standard survey practices were used throughout.

The inshore hydrography was accomplished by a portable depth recorder installed on Launch No. 75. Bar checks were made three times a day. The agreements were perfect and the portable depth recorder performed in an excellent manner for the entire survey.

Salinity observations were not made as the depths were less than 5 fathoms in 95% of the area. The bar checks proved that corrections due to salinity and temperature would be negligible and consequently unnecessary.

During field operations, soundings were recorded every 30 seconds to the nearest even foot. Later, usually the next day, the fathograms were scaled and corrections made to the record book, the depths being scaled to  $\frac{1}{2}$  foot. Tide reducers were also entered to the  $\frac{1}{2}$  foot and the depths inked on the boat sheet are the reduced soundings.

## SURVEY METHODS: (Cont'd)

A system of rotation of officers was used. Lieuts. Bowie and Garber alternated their duties by going out in the launch one day and staying aboard to work up the fathogram and record book the following day. The soundings were entered on the boat sheet by the officer who stayed aboard, after the launch party had returned to the ship. This system worked very satisfactory and was improvised because of the strict black-out regulation enforced by the U.S. Navy Section Base at Woods Hole.

The eastern part of the sheet was in the firing zone of an anti-aircraft machine gun range. Only during periods of inactive firing could the launch party work in this area. Constant contact was maintained with former Coast and Geodetic Survey Officers stationed at Camp Edwards to keep posted on the firing schedule.

A hydrographic party from the Launch FARIS made the survey in Waquoit Bay and a shoal development in the vicinity of signal ED. Pole soundings were made from a catamaran. A supplemental report of this survey is attached.

#### JUNCTIONS:

This sheet joins sheet H - 6349 on the West, Sheet H -6350 (1938-1912) on the South, and Sheets H-6469 and W - 6533 on the East and Northeast.

Junctions with surveys of previous surveys were satisfactory.

## GENERAL DISCUSSION:

A comparison with previous surveys indicates that Succonnessett Shoal has changed since the earlier surveys. This may be due partly to the 1938 hurricane and partly to a very probable constant shifting of sand. Some of the soundings in red (entered by office) were verified but most of them have changed. Some are shoaler and some are deeper. This will be self-evident upon inspection of the boat sheet. Depths as shoal as 15, 2 and 3 feet were obtained at various intervals along the shoal.

The fathogram records disclose a sawtooth profile of the bottom. This profile looks like rock but actually it is hard packed sand and the tops of these shoal spots were clearly visible on numerous instances. Tide rips border the shoal areas.

South of the entrance to Waquoit Bay, two red soundings, 26 Lang. 70 51.65° and 28 feet respectively, were investigated.

Lat. 41°31.74' Long. 70°31.70'

These sags are superseded by sags of the present survey

## GENERAL DISCUSSION: (Cont'd)

A least depth of 24 feet was recorded 75 meters NW of the 26 foot spot. It is recommended that the 24 foot depth be charted in its proper position in lieu of the 26 foot sounding.

A 40 foot sounding was obtained directly over the red 28 foot sounding. The bottom in this vicinity is very irregular. A 32 foot sounding was obtained 50 meters to the NE, a 30 foot sounding 110 meters to the SE, and a 20 foot sounding 500 meters to the SE. The latter sounding is in agreement with the hydrography on Sheet H - 6350. It is recommended that the 28 foot sounding be deleted from all charts and the least depths as determined by the development on this sheet be substituted in their proper positions.

Cross lines were run at various intervals. All crossings were in good agreement.

## SMOOTH PLOTTING:

As per instructions, all data is forwarded to the Washington office to be plotted on the original smooth sheet.

Respectfully submitted,

John Bowie, Jr. Commanding Officer,

U.S.C. & G.S. MV GILBERT

## NOTE

The following is for the general information of the employee who performs the smooth plotting and writes the review: Under normal times, a closer development of the eastern part of Succonnesset Shoal would have been made. This survey was made under very unfavorable circumstances. Tide rips and cross currents made steering straight lines very difficult. as our launch drew 3 feet and the area could only be entered at high tide because of numerous spots which did not have that much water. These shoal spots could be easily picked out as the bottom was visible and we could steer the launch over the shoalest places. Also due to the area being directly in front of a U. S. Army anti-Aircraft rifle range, times were very infrequent when we could get a full day for hydrography. Consequently, most of the survey was accomplished between 11:00 and 13:00 o'clock when the gunners and target towing pilots paused for lunch. No chances could be taken for to become stranded on a sandbar on a falling tide as it would very likely be fatal to all. concerned, particularly since our launch was painted an invisible war color which really works. It is difficult to see the launch at a distance of over one mile except when underway and a good white wake is showing.

J.13.

## Statistics to Accompany

Sheet H = 6468, 1942

Nantucket Sound, Mass.

DATE	DAY	STAT. MILES	NO. of
1942	LETTER	SOUNDING LINES	POSITIONS
Aug. 3 5 6 7 12 17	a	40.3	167
	b	32.8	178
	c	33.0	183
	d	38.0	163
	e	34.7	187
	f	14.2	86
	g	15.5	94
	h	29.3	166
Sep. 2	j	$\frac{1.3}{239.1}$	<u>22</u> 1246

Area - Square Statute miles . . . 5.13

No. of Soundings.... Continuous profile

\* \* \* \* \*

## TIDAL \* DATA

As per paragraph 9 of the Supplemental Instructions, dated March 9, 1942, Project HT - 217, the average of the tides at Falmouth Heights and Cotuit Highlands was used for the reduction of soundings along the outside coast and the entrance to Waquoit Bay.

For the work in Waquoit Bay proper a tide staff was established at the head of the bay as per paragraph 10 of the above mentioned Instructions for the reduction of soundings.

The location of the tide stations and M.L.W. on the tide staff as determined by spirit levels to existing B.M.'s is as follows:

STATION	LATITUDE	LONGITUDE	M.L.W. on STAFF
Falmouth Heights	41° 32.7°	70° 35.6'	2.8
Cotuit Highlands	41° 36.4'	70° 26.2'	0.7
Waquoit Bay	410 34.71	700 31.71	4.0

## List of Signals

to

Accompany Sheet H = 6468, 1942

Nantucket Sound, Mass.

TOPOGRAPHIC SHEET \_ A

ABE	FOR	JUG
BAN .	GUT	LEE /
DIG	HIE	TAM
ED	HOP	PIT
END	; IT	RED
FLA	JET	SAY

BOW - Bowen, 1934

DIL - - From Boat Sheet H - 6468 - Verified by Topography

HIE - n n n n n n n

MON \_ " " " " " " "

TOPOGRAPHIC SHEET - B T-6887 & Gray

BUS MOE /
IN POLE /
TIM /

#### DESCRIPTIVE REPORTS:

This survey is described in two descriptive reports H-6468, John Bowie, Jr., Chief of Party and H-6468a, W. F. Deane, Chief of Party.

#### SHORELINE:

The inked shoreline shown on the smooth sheet was transferred shoreline from the plane table survey, while the shoreline shown in pencil was transferred from the boat sheet. This latter shoreline was apparently determined by air-photo compilation.

#### TOPO CONTROL:

Difficulty was experienced in plotting the hydrography in Waquoit Bay. Lieut. (j.g.) R. H. Randall who did the hydrography in this area and who was in Norfolk when this difficulty was encountered was consulted about apparent discrepancies in the topographic control. The following note relative to the topographic control was written by him.

"Because of coincident need of the topo sheet by two parties, the control for Waquoit Bay was run on the boat sheet by plane table procedure. Later these signals were transferred to the topo sheet, though evidently incorrectly in some cases, due to discrepancies in projections. Therefore, the positions of signals TAL, SIN, SAY, SEP, LAG and Nythosmooth sheet SAX were readjusted on the smooth sheet after further position of signals examination of their positions on the boat sheet. Replotting agree ment with the positions apparently allows plotting of sounding lines in their approximate locations on the original boat and the property of these positions are allowed by the property of these positions apparently allows plotting of sounding the property of the process of the property of the pr

The control for the hydrography in the small bay east of Waquoit Bay was taken from the boat sheet on verbal instructions from Lt. Comdr. John Bowie, Jr., who was also in Norfolk when the control for this area was originally plotted. No graphic control for the topographic signals in this area were furnished this office by the field party.

During the plotting of the hydrography in the above area, it was found that the location of some of the topographic signals were apparently in error. Lieut. (j.g.) Randall was again consulted with the result that some of the topographic signals were moved in order that better agreement of hydrography, and hydrography and shoreline could be obtained.

Topo Station CUP was transferred from the boat sheet as its  $\checkmark$  location is not shown on the graphic control sheet.

## HYDROGRAPHY:

In accordance with a note in the sounding record, g (blue) day was not plotted. This area is covered by h (blue) day. The bottom characteristics obtained on g (blue) day however, are shown on the smooth sheet.

Depth recorder not working properly on this day

Respectfully submitted,

Isadore M. Zeskind,

Associate Cartographic Engineer

Norfolk, Va. May 26, 1943

Approved and Forwarded.

Paul C. Whitney

Supervisor, S. E. District

## DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

## HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Field No. 6468-

REGISTER NO.

H6468

(	
State Mas <b>sac</b> husetts	
General locality Nantucket Sour	nd
Locality Waquoit Bay	
Scale 1:10 000 Date of survey	August , 1942
Vessel Launch FARIS	
Chief of Party William F. Dear	ne
Surveyed byRobert H. Rande	all, Jr.
Protracted by L.E. Klienfelter	
Soundings penciled by L.E. Klienfel	ter
Soundings in <b>EXERCIS</b> feet	
Plane of referenceMLW	
Subdivision of wire dragged areas by	·
Inked by PH. Andros	<del>-</del>
Verified by P.H. Andros	
Instructions dated January 17, ame	ended March 9 , 1942
Remarks:	
	·

U. S. GOVERNMENT PRINTING OFFICE

## HYDROGRAPHIC SHEET NUMBER 6468A\* WAQUOIT BAY, MASSACHUSETTS

In order to facilitate the survey of the area on Sheet 6468 a separate boat sheet was made for Waquoit Bay so that the party of the Launch FARIS could do catamaran work concurrently with the fathometer surveys of the M. V. GILBERT.

SCOPE: This sheet is comprised by Waquoit Bay and tributary bays between Longitude 70 29' and Longitude 70 33'.

METHODS: Standard hydrographic survey methods were used. Sextant fixes controlled the sounding lines where topographic signals existed; in some cases the lines were controlled by reference to some noticeable feature of the shoreline. These latter cases occurred in tributary bays and channels of small importance. A sounding pole was used to measure the depth.

GENERAL: Waquoit Bay has a fairly uniform depth of about 6 feet in the central section and has deeper water on the west side than on the east. Crab grass impedes boat operation along the entire eastern shore for a distance of approximately 150 meters to 300 meters offshore. The bottom is generally of mud and broken shell.

The area near the entrance to the bay is in a state of change because of the operations of two dredges. This party was able to survey all this dredging area except for a narrow strip

indicated on the boat sheet; here, it was impossible to run lines because of the dredges and pipe lines. The area surrounded by blue dashed line on the boat sheet should be considered subject to change as the dredging progresses. It should be noted that the dashed pencil line encloses the proposed dredging project, however, the dredges at present have worked outside this limit to the eastward. From all indications, some of the mud sucked from the bottom has not been piped far enough inshore and has spilled back into the waterway. This has been a subject of contention between the dredging company and local Army authorities.

Hamblin Pond is used by small sail and power boats. The  $\nu$  average depth in the navigable section is about  $2\frac{1}{2}$  feet; the bottom is of mud and broken shell.

Jehu Pond is little used so no detailed survey was made.

Despite the inaccessibility of this pond the depths are greater, than those of Waquoit Bay and Hamblin Pond.

ANCHORAGES: Anchorage may be had anywhere in Waquoit Bay in from 3 to 8 feet of water; the bottom provides good holding. The best anchorage is in the north section where depths are generally greater and where there is more protection from the weather. Small boat anchorage may be had in any of the tributary bays with excellent protection from heavy weather.

CHANNELS: The entrance to Waquoit Bay is through jetties and here the controlling depth is \$\frac{5}{6}\$ feet. This reduces to 5 feet

after the jetties are cleared. There is a dredging operation now in progress to obtain a depth of from 10 to 12 feet at the entrance.

The channels from Waquoit Bay to Hamblin Pond and Jehu Pond have least depths of 2 feet.

TIDES: A tide staff was maintained at the Waquoit Bay Yacht
Club in order to obtain proper reduction of soundings.

## ST.ATISTICS:

Statute miles of sounding line	31.5
Area in square statute miles	3 <b>.</b> 6
Number of positions	536
Number of soundings	2844

Respectfully submitted;

William F. Deane, H. & G., E.

#### ADDENDA

The survey of Waquoit Bay had been accomplished when it was noted that dredging operations in the entrance to the bay had ceased.

This party revisited the area and using a catamaran ran sounding lines in the channel and in spaces forbidden before by the presence of the dredges. The soundings obtained were inked on the boat sheet in red and should be accepted when deeper than those obtained during former work.

W. F. D.

## LIST OF SIGNALS USED ON BOATSHEET 6468 A

## Topographic

POL
QUAT
RED
SAY
SAX
SEP
SHED
sin
SINE
STAF
TAL
TEE
TOW
TRES
UNO

## Surveys Section (Chart Division)

## HYDROGRAPHIC SURVEY NO. .....

Records accompanying survey:
Boat sheets2.; sounding vols. 9; wire drag vols9;
bomb vols; graphic recorder rolls .7;
special reports, etc 6 Station Cards
•••••••••••••••••••••••••••••••••••••••
The following statistics will be submitted with the cartog-rapher's report on the sheet:
Number of positions on sheet .1.7.35.
Number of positions checked $QQ$ .
Number of positions revised/
Number of soundings recorded 12,693
Number of soundings revised (refers to depth only) ??.
Number of soundings erroneously spaced
Number of signals erroneously plotted or transferredQ
Topographic details Time20
Junctions Time24.
Verification of soundings from graphic record Time . 38
Verification by. RH. Andras Total time 198 hrs. Date 7:23:43.
Review by R.H. Carotesso Time 2/2. Date 7/.29/43.

	Remarks	Decisions
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Succonnesset Shoal										4
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# MEMORANDUM IMMEDIATE ATTENTION

SURVEY DESCRIPTIVE REPORT >	<b>H6468</b> No. H <sub>6468</sub> No. T	received June registered verified reviewed approved	5, 1943 June 5, 1943
		Lapproved	

This is forwarded in order that your attention may be directed to the matters as indicated below. Please initial in column 3 as an acknowledgement that your attention has been thus directed. The complete original records are available if desired. If you cannot give this your immediate attention, please initial, note, and forward to the next section marked, calling for the records at your convenience.

ROUTE		Initial	Attention called to
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88			
90			

RETURN TO

82 R.W.Knox

## TIDE NOTE FOR HYDROGRAPHIC SHEET

June 11, 1943

Division of Hydrography-and Topography:

Division of Charts: Attention: H. R. EDMONSTON

Tide Reducers are approved in 9 volumes of sounding records for

HYDROGRAPHIC SHEET 6468

Locality Waquoit Bay and Succonnesset Shoal, Nantucket Sound, Mass.

Chief of Party: John Bowie, Jr., in 1942 Plane of reference is mean low water reading

0.7 ft. on tide staff at Cotuit Highlands

6.3 ft. below B.M. 1

2.8 ft. on tide staff at Falmouth Heights

9.7 ft. below B.M. 1

3.9 ft. on tide staff at Waquoit Bay

12.8 ft. below B.M. 1

NOTE: Tide reducers for soundings in Nantucket Sound are a mean of the tides at Cotuit Highlands and Falmouth Heights.

Height of mean high water above plane of reference in Nantucket Sound is 1.9 feet; in Waquoit Bay, 1.1 feet.

Condition of records satisfactory except as noted below:

Chief, Division of Tides and Currents.

U. S. GOVERNMENT PRINTING OFFICE

#### DIVISION OF CHARTS

#### REVIEW SECTION - SURVEYS BRANCH

#### REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-6468

Field No. 6468

Massachusetts, Nantucket Sound, Waquoit Bay,
Succonnesset Shoal
Surveyed in August 1942; Scale 1:10,000
Instructions dated January 17, 1938; March 9, 1942

## Soundings:

#### Control:

808 Fathometer Sounding Pole

Three-point Fix on Shore Signals

Chief of Party - John Bowie, Jr.
Surveyed by - J. Bowie, H. F. Garber and W. F. Deane
Protracted by - L. E. Klinefelter
Soundings plotted by - L. E. Klinefelter
Verified and inked by - P. H. Andros
Reviewed by - R. H. Carstens
Inspected by - H. R. Edmonston, July 30, 1943

## 1. Shoreline and Signals

The shoreline and signals originate with the air photographic survey T-5742 (1938), topographic survey T-6887 (1942) and graphic control executed on the boat sheet of the present survey. Within the common area the shoreline from T-6887 was considered as superseding that of T-5742.

## 2. Sounding Line Crossings

Satisfactory.

## 3. Depth Curves

Satisfactory.

## 4. Junctions with Contemporary Surveys

A satisfactory junction was effected with H-6349 (1938-42) on the west, H-6350 (1938-42) on the south, H-6469 (1939-42) on the east and H-6533 (1939-42) on the northeast and southeast.

## 5. Comparison with Prior Surveys

## a. $\frac{\text{H}-455a}{\text{H}-527}$ (1854) 1:40,000 1:30,000

There are differences in depth of as much as 20 feet, which are caused largely by a change in the bottom. In Lat. 41°32.3'; Long. 70°26.1' Succonnesset Shoal has extended eastward about 600 meters and in Lat. 41°32.6'; Long. 70°28.2' the 21-ft. passage through the shoal has filled to depths of 3 feet. The present survey is adequate to supersede these early surveys within the common area.

## b. H-1880 (1888) 1:20,000

To the west of Long. 70°30' the agreement in depth is generally within 1-2 feet. To the east of this longitude changes have taken place on Succonnesset Shoal and numerous new shoal spots have been revealed as, for example, in the vicinity of Lat. 41°32.8'; Long. 70°29.7' where numerous 6-ft. spots were found in an area where prior depths were 9-15 feet. The portion of Succonnesset Shoal in Lat. 41°32.7'; Long. 70°26.6' has shifted northward 100-200 meters, and the eastern end of the shoal has extended eastward into former depths of over 30 feet.

In Lat. 41°32.6'; Long. 70°29.2' the shoal has shifted 200 meters to the southward and the former depth of 5 feet (chart 1266) has now washed to a depth of about 12 feet. In Lat. 41°32.27'; Long. 70°31.66' and Lat. 41°31.73'; Long. 70°31.70' nearby present survey depths of 24 feet and 30 feet are adequate to supersede the 26-ft. and 28-ft. depths (chart 1266) from the prior survey. The present survey satisfactorily reveals all the necessary hydrographic information and is adequate to supersede the earlier survey within the common area.

## 6. Comparison with Chart 1209 (Latest print date 5-8-43)

## a. Hydrography

The charted hydrography originates with the previously discussed surveys which need no further consideration. The outline of the channel at the entrance to Waquoit Bay no longer represents actual conditions and should be deleted.

## b. Aids to Navigation

There are no charted aids to navigation within the limits of the present survey. The aids to navigation in Waquoit Bay are uncharted and are possibly maintained by local interests.

## c. Controlling Depths

The present survey value of the controlling depth into Waquoit Bay is 3 feet deeper than the charted value.

## 7. Condition of Survey

Satisfactory, except that it was necessary to add numerous soundings from the fathograms in order to show the proper development of the area.

- 8. Compliance with Instructions for the Project Satisfactory.
- 9. Additional Field Work Recommended

None.

## 10. Superseded Surveys

H-455a (1854) in part H-527 (1855-56) in part H-1880 (1888) " "

Examined and approved:

Chief, Surveys Branch

Chief, Division of Charts

Chief, Section of Hydrography Chief, Division of Coastal Surveys

applied to Chart 259- Sept. 15, 1943- Swalley

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